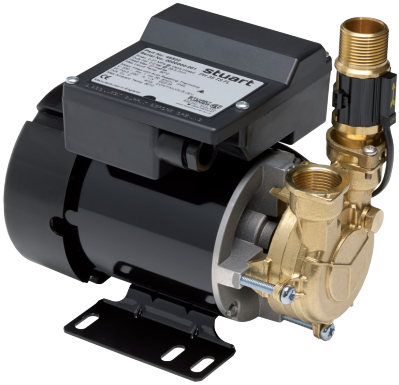
STUART TURNER
ENGINEERED TO EXCEL

STUART

Installation, Operation & Maintenance Instructions

Please leave this instruction booklet with the owner as it contains important guarantee, maintenance and safety information



Read this manual carefully before commencing installation.

This manual covers the following products suitable for 230/1/50 supply:

PH 35 TS FL
Pt. No. 46522

PH 45 TS FL
Pt. No. 46530

PHD 35 TS FL
Pt. No. 46625

PHD 45 TS FL
Pt. No. 46531

PH 35 ES FL
Pt. No. 46566

PH 45 ES FL
Pt. No. 46567

FOR POSITIVE HEAD APPLICATIONS ONLY

50 Hz

CE

2 YEAR GUARANTEE

PRODUCT DESCRIPTION

Electric motor driven peripheral pump complete with an automatic control system, consisting of flow switches and electronic controls.

APPLICATION

The Stuart PH FL range is designed for pressure boosting applications in vented stored, hot, cold or blended clean water systems, where under gravity, a flow is available of at least 1 l/min. If you wish to boost both hot and cold services, then PH Boostamatic models must be used, for further details contact 'TechAssist'.

Inlet pressures to the pump and ambient temperatures must not exceed the values given in the technical specifications.

STORAGE

If this product is not to be installed immediately on receipt, ensure that it is stored in a dry, frost and vibration free location in its original packaging.

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WARNINGS:

- **This pump set must not be used for any other application without the written consent of Stuart Turner Limited and in particular, must not be connected directly to the mains water supply.**
- **This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.**
- **Children must not play with the appliance.**
- **Cleaning and user maintenance shall not be made by children without supervision.**
- **Maximum head (closed valve) PH 35 TS FL-33 metres, PH 45 TS FL-40 metres, PHD 35 TS FL-28.7 metres, PHD 45 TS FL-41.6 metres.**
- **The motor casing can become very hot under normal operating conditions. Care must be taken to ensure it cannot be touched during operation.**

- **The electrical installation must be carried out in accordance with the current national electrical regulations.**
- **The electrical installation must be installed by a qualified person.**
- **In the interests of electrical safety a 30 mA residual current device (R.C.D. not supplied) should be installed in the supply circuit. This may be part of a consumer unit or a separate unit.**
- **Before starting work on the electrical supply ensure power supply is isolated.**
- **DO NOT allow the supply cord to contact hot surfaces, including the motor shell, pump body or pipework. The cord should be safely routed and secured by cable clips.**

Cont ...

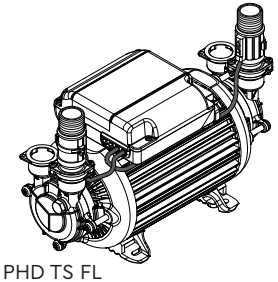
- **This appliance must be earthed via the supply cord, which must be correctly connected to the earth point located in the terminal box.**
- **The supply cord and internal wiring within the terminal box are routed and secured to ensure compliance with the electrical standard EN 60335–1. It is essential that prior to any disturbance of this internal wiring, all cable routing and securing details are carefully noted to ensure re-assembly to the same factory pattern is always maintained.**
- **If the supply cord is to be changed or is damaged, it must be replaced with a special cord assembly available from Stuart Turner or one of their approved repairers.**

Please read installation details carefully as they are intended to ensure this product provides long, trouble free service. Failure to install the unit in accordance with the installation instructions will lead to invalidation of the warranty.

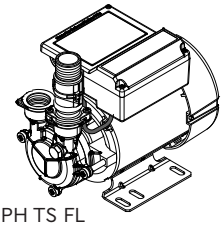
Cont ...

CHECKLIST

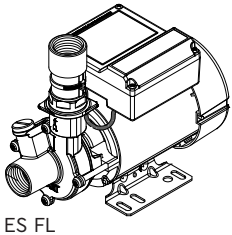
IMPORTANT: With the pump removed from its packaging check for any damage prior to installation. If any damage is found contact Stuart Turner Ltd within 24 hours of receipt.



PHD TS FL



PH TS FL



PH ES FL

Fig. 1

Your product may vary slightly from the picture above.

1 IMPORTANT FACTS: READ BEFORE COMMENCING PUMP INSTALLATION

A **Water storage capacity**.

1.11 The water storage capacity must be sufficient to meet the flow rates required by the pumped equipment and any other water using fittings and appliances, which may be operated simultaneously.

1.12 Ensure the pump is primed as described in the priming section before starting, damage to the shaft seal will result otherwise. See Section 4 – Plumbing.

B **Water temperature**

The water entering the pump must be controlled as follows:

1.13 The maximum allowable water temperature is 80 °C.

1.14 The minimum allowable water temperature is 4 °C.

1.15 **Ambient temperature:** The pump must be sited in a location where the maximum ambient temperature should not exceed 40 °C continuous or 50 °C intermittent (ES models only).

1.16 **DO NOT** fit a pump if the hot water is heated via a method whereby the water temperature cannot be controlled, such as solar or solid fuel you must consult the TechAssist team on +44 (0) 800 31 969 80.

C **Water flow**

1.17 For this pump to operate correctly there must be a minimum gravity flow of at least 0.6 l/min through all outlets to be pumped.

D **Pipework – general**

1.18 **Secure pipework:** Ensure pipework to and from pump is independently supported & clipped to prevent forces being transferred to inlet and outlet branches of pump.

1.19 **Flux:** Solder joints must be completed and flux residues removed prior to pump installation **(flux damage will void any warranty)**.

1.20 **Pipework design:** Care should be taken in the design of pipework runs to minimize the risk of air locks e.g. use drawn bends rather than 90° bends.

1.21 **DO NOT** introduce solder flux to pump parts manufactured from plastic.

1.22 **DO NOT** allow contact with oil or cellulose based paints, paint thinners or strippers, acid based descalents or aggressive cleaning agents.

1.23 **DO NOT** install a non-return valve, or devices which contain non-return valves, in the suction (inlet) pipework to the pump. The pump must be free to vent to the supply tank at all times.

1.24 **DO NOT** fit single ended models on installations with mixer taps.

E **Plumbing installation regulations**

1.25 The plumbing installation must be installed by a qualified person and in accordance with local regulations.

F **Electrical/installation regulation**

1.26 Check the mains voltage and frequency corresponds to the values on the pump rating plate.

2 LOCATION – GENERAL

2.11 **Access:** For emergencies and maintenance the pump must be easily accessible.

2.12 **Protection:** The pump must be located in a dry position, frost free and protected from freezing, particularly when installed in a loft (notrecommended).

2.13 **Ventilation:** Ensure an adequate air flow to cool the pump. Separate the pump from other appliances that generate heat. An 80 mm (3 ") air gap must be maintained around the pump.

2.14 **Safety:** The motor casing can become very hot under normal operating conditions. Care must be taken to ensure it cannot be touched during operation.

2.15 **Water retention:** Site the pump in a location where in the unlikely event of a water leak, any spillage is contained or routed to avoid electrics or areas sensitive to water damage.

2.16 **Mounting foot securing:** This pump is fitted with mild steel feet. If there is a requirement to secure the pump via the feet, the following points should be noted.
The pump should be mounted only in the horizontal position.

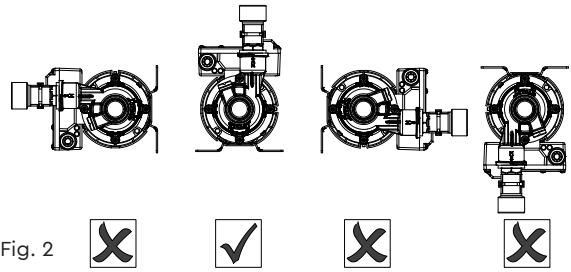


Fig. 2

The mounting bolts used to secure the pump must be fitted with a plain washer to distribute clamping load evenly across load bearing face of foot (not supplied).

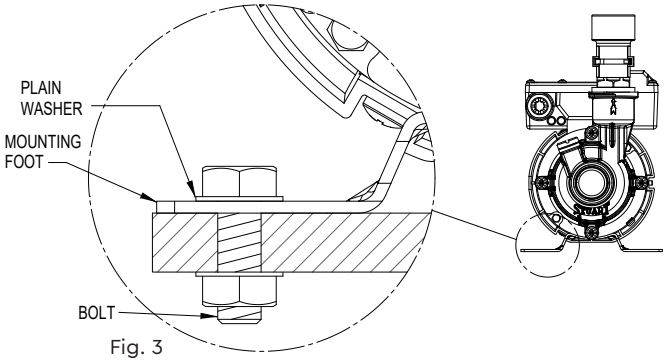


Fig. 3

Cont ...

3 ELECTRICAL INSTALLATION / EARTHING

3.11 **Regulations:** The electrical installation must be carried out in accordance with the current local regulations by a qualified person.

3.12 **Safety:** In the interests of electrical safety a 30 mA residual current device (**R.C.D. not supplied**) should be installed in the supply circuit. This may be part of a consumer unit or a separate unit.

3.13 Before starting work on the electrical supply ensure power supply is isolated.

3.14 **DO NOT** allow the supply cord to contact hot surfaces, including the motor shell, pump body or pipework. The cord should be safely routed and secured by cable clips.

3.15 **Earthing:** This appliance must be earthed via the supply cord, which must be correctly connected to the earth point located in the terminal box.

3.16 **Connections:** The pump must be permanently connected to the fixed wiring of the mains supply using the factory fitted supply cord, via a dedicated double pole switched fused spur off the ring main.

3.17 **Wiring of connection unit:**

WARNING: This appliance must be earthed.

The wires in the mains lead (supply cord) are coloured in accordance with the following code:

Green and Yellow: Earth
Blue: Neutral
Brown: Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your connection unit proceed as follows:

- The wire which is coloured green and yellow must be connected to the terminal in the connection unit which is marked with the letter E or by the earth symbol: ⏚ or coloured green or green and yellow.
- The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
- The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

Cont ...

3.18 **Wiring diagrams:**

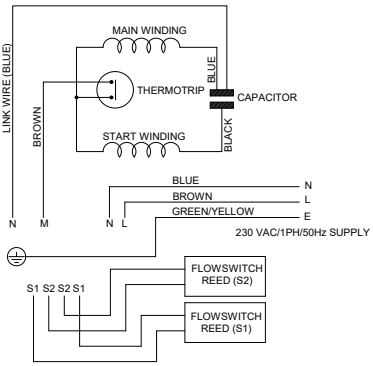


Fig. 4 PHD FL models

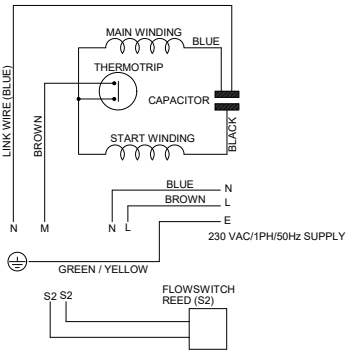


Fig. 5 PH 35 variants

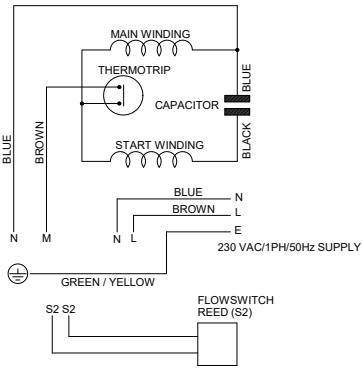


Fig. 6 PH 45 variants

3.19 **Fuse:** PHD FL models should use 13 Amp fuse, all other models use 5 Amp fuse.

3.20 **Supply cord replacement:**

The supply cord and internal wiring within the terminal box are routed and secured to ensure compliance with the electrical standard EN 60335–1. It is essential that prior to any disturbance of this internal wiring, all cable routing and securing details are carefully noted to ensure re-assembly to the same factory pattern is always maintained.

3.21 If the supply cord is to be changed or damaged, it must be replaced by a special cord available from Stuart Turner or one of its approved repairers.

4 PLUMBING

4.11 **Pipework:** For optimum performance pipework use 28 mm dia., 22 mm can be used but will result in reduced pump performance.
Pipework should only reduce to 15 mm when entering terminal fitting.

4.12 **Isolating valves:** Separate isolating valves (non restrictive) must be fitted to allow easy pump service.

4.13 **Inline strainer:** When the pump is to be installed in areas where there is risk of debris or scale build up within the system, you **MUST** ensure the inlet pipework is fitted with an inline strainer.

4.14 The pump must be located with at least 0.5 metres flooded suction at all times.

COLD WATER INSTALLATION

4.15 Must have a dedicated air free supply.

4.16 Pump must be sited as close to the water source as possible and never more than 4 metres away.

4.17 Do not connect this pump to the mains supply.

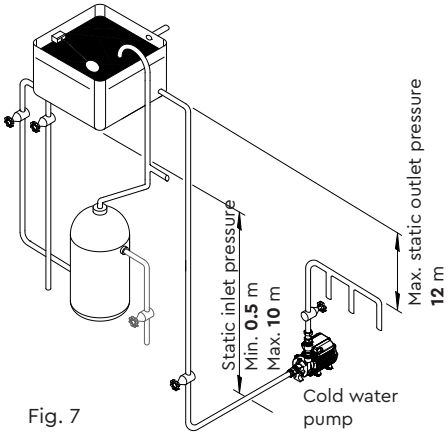


Fig. 7

HOT WATER INSTALLATION

4.18 Must have a dedicated air free supply.

4.19 Pump must be sited as close to the water source as possible and never more than 4 metres away.

4.20 The preferred pump location is below the hot water take off.

4.21 However if the pump can not be located below the hot stored water take off the following must be adhered too:

- Water supply must be by side flange.
- The pump must be located 0.5 metre below the cold water tank.
- From a hot dedicated air free connection a downward loop of 350 mm depth must be fitted before rising directly to the pump.

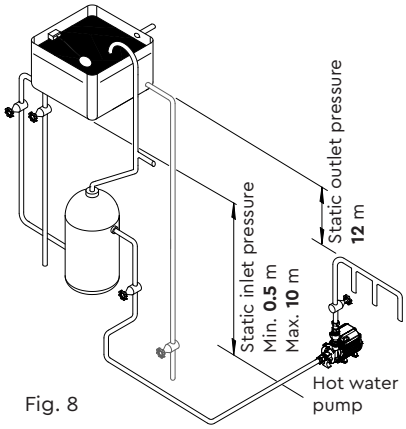


Fig. 8

Cont ...

4.22 **System flushing:** The pipework system should be flushed out prior to the pump being connected to ensure any contaminants/ chemical residues and foreign bodies are removed from elsewhere in the system.

4.23 **Priming:**

Never operate pump with inlet and/or outlet isolating valves in the closed position. Damage will occur!

The pump must be primed (filled with water) before starting.
Turn on the service valves.

(a) Loosen vent plug and allow an even flow of water this may take a few seconds.

(b) Re-seal vent plug, nipping tight. The pump is now ready to start.

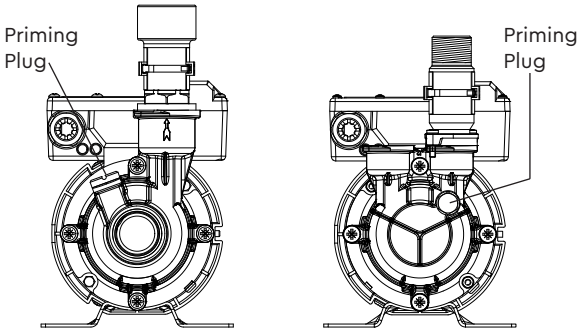


Fig. 9 PH ES FL PH TS FL, PHD FL

4.24 **Starting:**

a) Switch on power and open terminal fitting.

b) Open and close all outlets in turn associated with the pump, allowing water to flow from each outlet until all air is purged. As each outlet is opened and closed, the pump will start and stop respectively.

c) Any tap or control valve within the system when opened and closed will now turn the pump on/off.

4.25 **Maintenance:**

This product is maintenance free for its life, however it is a mechanical product and will eventually show signs of wear. Spare parts are available, for more information phone the Stuart Turner TechAssist team on +44 (0) 800 31 969 80.

Cont ...

5 TECHNICAL SPECIFICATION

Pump Model		PH 35 TS FL 50 Hz 46522	PH 45 TS FL 50 Hz 46530	PHD 35 TS FL 50 Hz 46625	PHD 45 TS FL 50 Hz 46531
General	Guarantee	2 years			
	WRAS approval	Approved materials			
	Approvals	CE			
Features	Pump type	Peripheral			
	Pump control	Flow switch			
	Dry run protection	✓	✓	✓	✓
	Priming vent plug	✓	✓	✓	✓
	Typical noise	56 dB(A)		52 dB(A)	61 dB(A)
Materials	Pump body	Brass			
	Impeller	Brass			
	Mechanical seal	EPDM / PTFE / Al. Oxide			
Performance	Maximum head – closed valve	3.3 bar / 33 metres	4.0 bar / 40 metres	2.82 bar / 28.7 metres	4.08 bar / 41.6 metres
	Performance	2.5 bar / 25 m @ 9 l/min	3.3 bar / 33 m @ 9 l/min	2.5 bar / 25 m @ 9 l/min	3.4 bar / 34 m @ 9 l/min
	Performance	1.4 bar / 14 m @ 18 l/min	2.0 bar / 20 m @ 18 l/min	1.0 bar / 10 m @ 40 l/min	1.5 bar / 15 m @ 40 l/min
	Maximum flow	32 l/min	43 l/min	60 l/min	65 l/min
	Minimum static inlet pressure	0.05 bar (0.5 metres)			
	Maximum static inlet pressure	1.0 bar (10 metres)			
	Maximum working pressure*	600 kPa (6 bar)			
	Maximum viscosity	50 secs redwood no. 1 9.5 centistokes			
	Maximum ambient air temperature	40 °C			
	Min / Max water temperature	Min 4 °C / Max 80 °C			
	Flow switch sensitivity	1 l/min (approx)			
Connections	Pump connections	G ¾ female (inlet) G ¾ male (outlet)			
Motor	Type	Induction, auto-reset thermal trip			
	Duty rating	Continuous (S1) @ 2.5 l/min and above		Continuous (S1) @ 5 l/min and above (both ends pumping)	
Electrical	Power supply (Vac/Ph/Hz)	230 V a.c. / 1 / 50 Hz			
	Power consumption – P1	408 Watts	600 Watts	640 Watts	855 Watts
	Current – full load	1.8 Amps	2.6 Amps	2.9 Amps	3.7 Amps
	Fuse rating	5 Amps		13 Amps	
	Power cable length	1.5 metres (pre-wired)			
Physical	Enclosure protection	IP44			
	Length	209 mm	225 mm	300 mm	
	Width	132 mm		126 mm	
	Height – excluding hoses	197 mm		201 mm	
	Weight – including fittings	4.8 Kg	6.3 Kg	7.9 Kg	8.4 Kg

Cont ...

5 TECHNICAL SPECIFICATION

Pump Model		PH 35 ES FL 50 Hz 46566	PH 45 ES FL 50 Hz 46567
General	Guarantee	2 years	
	WRAS approval	Approved materials	
	Approvals	CE	
Features	Pump type	Peripheral	
	Pump controls	Flow switch	
	Dry run protection	✓	✓
	Priming vent plug	✓	✓
	Typical noise	61 dB(A)	64 dB(A)
Materials	Pump body	Brass	
	Impeller	Brass	
	Mechanical seal	EPDM / PTFE / Al. Oxide	
Performance	Maximum head – closed valve	3.3 bar / 33 metres	4.0 bar / 40 metres
	Performance	2.2 bar / 22 m @ 9 l/min	3.3 bar / 33 m @ 9 l/min
	Performance	1.3 bar / 13 m @ 18 l/min	2.3 bar / 23 m @ 18 l/min
	Maximum flow	33 l/min	41 l/min
	Minimum static inlet pressure	0.05 bar (0.5 metres)	
	Maximum static inlet pressure	1.0 bar (10 metres)	
	Maximum working pressure*	600 kPa (6 bar)	
	Max. ambient air temperature – continuous	40 °C	40 °C
	Max. ambient air temperature – intermittent	50 °C	50 °C
	Min / Max water temperature	Min 4 °C / Max 80 °C	
	Flow switch sensitivity	1 l/min (approx)	
Connections	Pump connections	G 1 female	
Motor	Type	Induction, auto-reset thermal trip	
	Duty rating	Continuous (S1) @ 5 l/min and above	
Electrical	Power supply (Vac/Ph/Hz)	230 V a.c. / 1 / 50 Hz	
	Power consumption – P1	446 Watts	665 Watts
	Current – full load	1.9 Amps	2.9 Amps
	Fuse rating	5 Amps	
	Power cable length	1.5 metres (pre-wired)	
Physical	Enclosure protection	IP44	
	Length	241 mm	257 mm
	Width	132 mm	
	Height – excluding hoses	218 mm	
	Weight – including fittings	5.6 Kg	6.6 Kg

Stuart Turner reserve the right to amend the specification in line with its policy of continuous development of its products.

*Note: The maximum pressure that can be applied to the pump under any installation conditions.

5.11 **Noise:** The equivalent continuous A-weighted sound pressure level at a distance of 1 metre from the pump does not exceed 70 dB(A).

Cont ...

6 TROUBLE SHOOTING GUIDE

Symptoms	Probable Cause	Recommended Action
Pump will not start.	Insufficient gravity flow.	Check flow rate minimum of 0.6 l/min required on full hot and cold.
	Electrical.	Check power supply. Check fuse (see fuse section). Check circuit breaker is set. Check wiring connections.
	Pump jammed.	If motor 'Buzzes' switch off power and contact Stuart Turner.
	Integral motor thermotrip activated.	Wait for thermotrip to auto-reset and check that duty point and run time is within specification (see technical specification).
Reduced/intermittent flow.	Incorrect or no anti-aeration flange fitted.	Check that the installation complies with installation instructions.
	Incorrect pipe sizes.	Check for correct pipe sizing, see Page 8 – Section 4.11.
	Blocked inlet filters.	Clean inlet filters.
	Hot water temperature set to high.	Reduce cylinder stat setting to 80 °C max.
	Blocked shower head spray plate.	Clean in accordance with manufacturers instructions.
No hot water.	Air locked water feed.	Vent hot water pump of air. Check cold feed to hot water cylinder. Check water level in cold water tank and that all stopcocks and isolating valves are open.
	Heating source not operating.	Check boiler is switched 'on'. Check cylinder thermostat. Check immersion heater. Check cylinder contains hot water.
	All hot water has been used.	Check tank volume is adequate.
	Faulty thermostatic mixer valve.	Consult makers instructions.
Pump runs on with outlets closed.	Jammed flow switch.	Remove outlet pipework and check that flow switch sits in lowest position. Check float for free movement.
	Damaged reed switch or P.C.B.	Check visually reed seated in groove on flow switch body. Position a magnet directly in front of the reed, slowly move the magnet up and down to a position that exceeds the extent of the reed clamp. If the pump does not start a possible reed switch or P.C.B fault is indicated. Contact Stuart Turner.
	Leak in system.	Check tap washers, w/c valve washers, pipe joints.
Pump starts with all outlets closed.	Air in system.	Bleed through system without pump running until hot and cold services run with no air.

6.11 **Fault Finding:** The PCB is also fitted with a "power on" indicator light. This will remain illuminated when mains power is supplied to the board.
The indicator light is located on the PCB within the terminal box.

- **This operation should only be carried out by a competent person**

To view the light the following procedure must be followed:-

- Isolate the mains electrical power supply from the pump.
- Remove the four screws retaining the terminal box lid (Fig. 10).
- Lift the terminal box lid off.
- **IMPORTANT** – Ensure there is no contact with any of the internal parts of the terminal box.
- Briefly reconnect the mains power supply to the pump – the 'power on light should illuminate if the pump has been correctly wired.
- Isolate the mains electrical power supply from the pump.
- Re fit the terminal box lid ensuring no cables are trapped.
- Re fit the four terminal box lid retaining screws, tighten to 0.8 Nm.

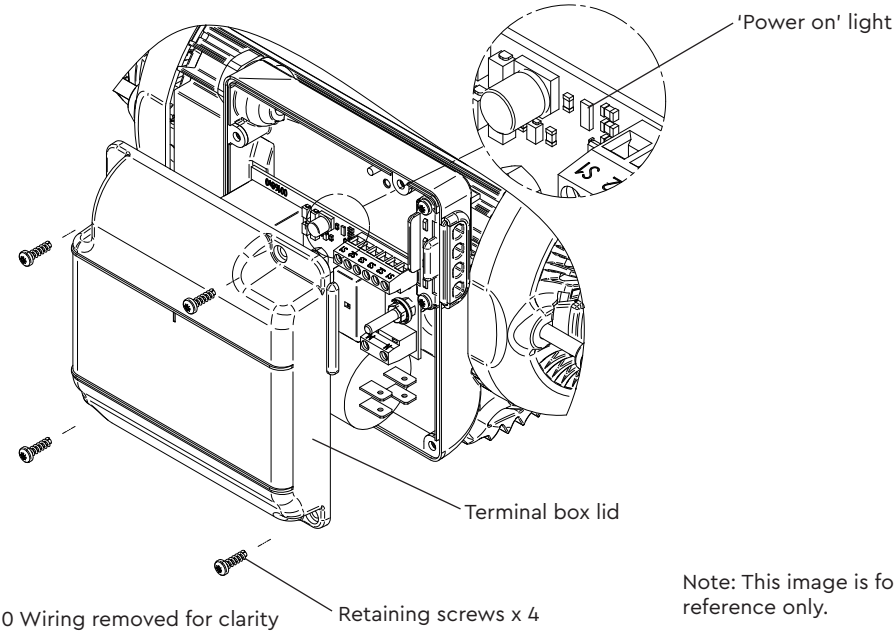


Fig. 10 Wiring removed for clarity

Note: This image is for reference only.

6.12 **Environment protection:** Your appliance contains valuable materials which can be recovered or recycled.
At the end of the products' useful life, please leave it at an appropriate local civic waste collection point.

Cont ...

7 YOUR 2 YEAR GUARANTEE

Congratulations on purchasing a Stuart Turner pump.

We are confident this pump will provide many years of trouble free service as all our products are manufactured to the very highest standard.

All Stuart Pumps are guaranteed to be free from defects in materials or workmanship for 2 years from the date of purchase.

Within the guarantee period we will repair, free of charge, any defects in the pump resulting from faults in material or workmanship, repairing or exchanging the whole unit as we may reasonably decide.

Not covered by this guarantee: Damage arising from incorrect installation, improper use, unauthorised repair, normal wear and tear and defects which have a negligible effect on the value or operation of the pump.

Reasonable evidence must be supplied that the product has been purchased within the guarantee term prior to the date of claim (such as proof of purchase or the pump serial number).

This guarantee is in addition to your statutory rights as a consumer. If you are in any doubt as to these rights, please contact your local Trading Standards Department.

In the event of a claim please telephone **'TechAssist'** or return the pump and flexible hoses with the accessories removed e.g pipes etc. If you have any doubt about removing a pump, please consult a professional.

+44 (0) 800 31 969 80

Proof of purchase should accompany the returned unit to avoid delay in investigation and dealing with your claim.

You should obtain appropriate insurance cover for any loss or damage which is not covered by Stuart Turner Ltd in this provision.

Please record here for your records.

TYPE NO.	SERIAL NO.	DATE PURCHASED

NOTES

NOTES

NOTES

CE

DECLARATION OF CONFORMITY

Machinery Directive – 2006/42/EC
BS EN 12100, BS EN 809
Low Voltage Directive – 2014/35/EU
BS EN 60335-1, BS EN 60335-2-41
EMC Directive – 2014/30/EU
BS EN 55014-1, BS EN 55014-2, BS EN 61000-3-2, BS EN 61000-3-3, BS EN 61000-4-2, BS EN 61000-4-3, BS EN 61000-4-4, BS EN 61000-4-5, BS EN 61000-4-6, BS EN 61000-4-11
EMF Directive – 1999/519/EC
BS EN 62233
RoHs Directive – 2011/65/EU
WEEE Directive – 2012/19/EU

IT IS HEREBY CERTIFIED THAT THE STUART ELECTRIC MOTOR DRIVEN PUMP AS SERIAL NUMBER BELOW, COMPLIES WITH THE ESSENTIAL REQUIREMENTS OF THE ABOVE E.E.C. DIRECTIVES.

RESPONSIBLE PERSON
AND MANUFACTURER

STUART TURNER LIMITED
HENLEY-ON-THAMES, OXFORDSHIRE
RG9 2AD ENGLAND.

Signed ..... Engineering Manager

Stuart Turner are an approved company to BS EN ISO 9001:2015

STUART TURNER
ENGINEERED TO EXCEL

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